STAT

Trans
Device

EVALUATION
TYPED: 1 October 1963

DATE: 12 September 1963

STAT PLACE:

SUBJ:

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DISCUSSION:

1. This is a joint contract in which Navy BUWEPS will receive the third of
25X1 three model viewers. Navy's unit will have digitizers added to permit measurement of pulses from the screw drives. Delivery to NAVPIC will occur 12 months from date of contract. The Model 552A is a considerably improved version of the High Magnification Direct Viewer, presently in operational use at NAVPIC. Essentially, it provides the capabilities requested in DO-315-RD64-1, Design objectives for the High Magnification Stereo Viewer, recently completed at NAVPIC.

2. Pertinent facts about the new design include:

a. Optical System.

(1) Zoom magnification from 1.5X to 135X.

(2) Approximately double the field of view in the present Navy model.

(3) Optical path switch for more efficient viewing of stereoscopic panoramic roll film. Consideration will be given by towards providing a STAT binocular view of each path (right and left) at no additional cost.

(4) Optical image switch (positive-to-negative) in either optical path. The Dove Prisms originally proposed to accomplish this have proven unsuccessful and have been replaced with "Panta Prisms."

(5) System resolution over 600 lines/mm.

b. Scanning System.

(1) Top absolute scanning speed will be one (1) inch per second. Any thing higher will require excessive complexity in the drive system or course adjustment at high magnifications. Even with the design approach now planned a slight "pulsing" motion will be noticable when viewing at highest magnification.

(2) Full 360° rotation of the joystick circuitry to permit coordination with any optical rotation.

(3) Logic to permit automatic retention of stereo when scanning stereo pairs whose conjugate images have different orientation (swing) and different scale in the original roll material.

c. Illumination Systems.

(1) Cold cathode general illumination with transistorized dimming control from 50 to 1000 ft-lamberts.

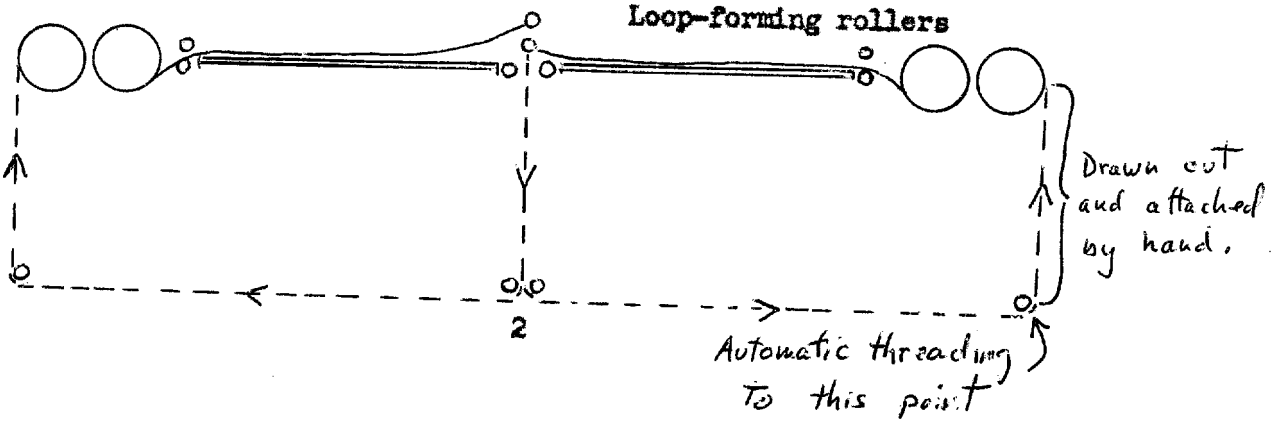
(2) Turret-type condensers for more efficient utilization of the high intensity light source throughout the range of magnification. Condenser change will occur automatically with the objective change.

d. Film Handling Systems.

(1) Capacity of one or two 500 ft. rolls of 35mm, 70mm, 5 inch and/or 9.5 inch wide film.

(2) Extension of the excess film loop length to 20 feet (between conjugate imagery on a single roll of film).

(3) Use of the film loop mechanism to thread the film through the transport system when viewing two rolls of film. Consideration will be given to using clips at the loop forming rollers instead of tape-to avoid fouling film.



(4) A vacuum system, probably utilizing [redacted] Microgroove material, will provide film hold-down for viewing. A decision on maximum and minimum "chip" sizes (as it concerns the vacuum system) shall be made later. STAT

(5) "Automatic" or spring-loaded detents shall be provided instead of the present screw fasteners at the spool loading position.

e. Measurement.

(1) A highly stable, rigidized casting is provided for the support of the X and Y carriages to accommodate both the high magnifications and measurement.

(2) Digitizers shall be provided delivering least readings of at least 0.0001 foot.

(3) An illuminated "dot" reticle will be provided, the size of which is adjustable by an iris diaphragm.

(4) Considerable discussion revolved around the future possibility of comparator-grade quality being built into this design - even eventual use (in some form) of the [redacted] Wave-Digitizer for sub-micron measurement. [redacted] STAT STAT is interested in receiving proposals which "trade off" cost vs. various levels of accuracy.

f. Construction.

(1) Take-up spools for dual roll mode of operation, originally planned to be low on the sides of the instrument, have been moved up near the supply spool position for easier loading, thus increasing the loop length from spool-to-spool from 8 feet to 11 feet. (See figure on page 2)

(2) The cabinet will be lengthened by two feet to approx. 81.". This will permit larger base plates for the objective assemblies, insuring more stable drive motions to complement the measurement and high magnification capabilities.

(3) A beneficial result of the cabinet lengthening is the increase of the excess film loop from 16 feet to 20 feet without a design change of the present efficient mechanism now in use at NAVPIC.

(4) A redesigned control panel will be mounted on a caster-supported console, permitting position on the left or right to suit operator preferences. The work shelf will be modified to accept the control console as desired. A reversible extension to the shelf shall be provided to replace the console when it is switched. A decision between a flat or sloping control panel surface must be made by discussion with the users. *

* Bob - The concensus (or I should say "everybody") is in favor of retaining the flat panel surface.

(5) Vibration isolators will be provided. A vibration study of the equipment's eventual operating location may be necessary to select the proper isolaters.

(6) Casters and leveling jacks shall be permanently attached to the instrument.

(7) Counterbalancing of the eyepiece support will be provided to assure easy, safe adjustment of the enlarged eyepiece assembly for different operators.

Very respectfully,

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